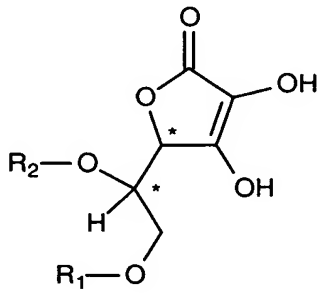
We Claim:

1. A thermally-developable composition comprising a binder, and in reactive association, a non-photosensitive source of reducible silver ions that includes a compound containing an imino group, and a reducing agent for said non-photosensitive source of reducible silver ions,

said reducing agent being a compound, or mixture thereof, represented by the following Structure (I):



(I)

wherein R_1 and R_2 are independently hydrogen or an acyl group having 11 or fewer carbon atoms, provided that at least one of R_1 and R_2 is an acyl group.

2. The composition of claim 1 wherein said acyl group comprises from 2 to 11 carbon atoms.

3. The composition of claim 1 wherein said acyl group comprises a cyclic group or a branched alkyl group.

4. The composition of claim 1 wherein R_1 and R_2 are the same or different acyl groups.

5. The composition of claim 1 wherein said reducing agent comprises one or more compounds defined in Structure I and identified in the following list with the noted R_1 and R_2 groups:

Compound	Derived From	R_1	R_2
I-1	L-ascorbic acid	*t*-Butyl-(C=O)-	H
I-2	D-isoascorbic acid	*t*-Butyl-(C=O)-	H
I-3	L-ascorbic acid	*t*-Butyl-(C=O)-	*t*-Butyl-(C=O)-
I-4	D-isoascorbic acid	*t*-Butyl-(C=O)-	*t*-Butyl-(C=O)-
I-5	D-isoascorbic acid	H	*t*-Butyl-(C=O)-
I-6	L-ascorbic acid	*i*-Propyl-(C=O)-	H
I-7	L-ascorbic acid	Ph-(C=O)-	H
I-8	L-ascorbic acid	1-Adamantyl-(C=O)-	H
I-9	L-ascorbic acid	1-Adamantylmethyl-(C=O)-	H
I-10	L-ascorbic acid	1-Methylcyclohexyl-(C=O)-	H
I-11	L-ascorbic acid	2-Adamantylmethyl-(C=O)	H
I-12	L-ascorbic acid	2,2-Dimethylpropyl-(C=O)-	H
I-13	L-ascorbic acid	Cyclohexyl-(C=O)-	H
I-14	L-ascorbic acid	1,1-Dimethylpropyl-(C=O)-	H
I-15	L-ascorbic acid	1-Ethylpropyl-(C=O)-	H
I-16	L-ascorbic acid	2,4,4-Trimethylpentyl-(C=O)-	H
I-17	L-ascorbic acid	2-Methylpropyl-(C=O)-	H
I-18	L-ascorbic acid	Cyclopentyl-(C=O)-	H
I-19	L-ascorbic acid	Diethylamino-(C=O)	H
I-20	L-ascorbic acid	Diethylamino-(C=O)-	Diethylamino-(C=O)-
I-21	L-ascorbic acid	Phenyl-NH-(C=O)-	H
I-22	L-ascorbic acid	Hexyl-NH-(C=O)-	Hexyl-NH-(C=O)-
I-23	L-ascorbic acid	*t*-Butyl-(C=O)-	Ethyl-(C=O)-
I-24	L-ascorbic acid	Ethyl-(C=O)-	Ethyl-(C=O)-
I-25	L-ascorbic acid	Ethyl-O-(C=O)-	H
I-26	L-ascorbic acid	Phenyl-O-(C=O)-	H
I-27	L-ascorbic acid	4-HO-Phenyl-(C=O)-	H

I-28	L-ascorbic acid	2-norbornylmethyl-(C=O)-	H
I-29	L-ascorbic acid	3,4-$(HO)_2$-Phenyl-(C=O)-	H
I-30	L-ascorbic acid	*i*-Propyl-(C=O)-	*i*-Propyl-(C=O)-
I-31	L-ascorbic acid	Ethyl-(C=O)-	Ethyl-(C=O)-

6. The composition of claim 1 wherein said reducing agent is present in an amount of from about 0.3 to about 1.0 mol/mol of total silver.

7. The composition of claim 1 further comprising a photosensitive silver halide.

8. The composition of claim 1 further comprising a preformed photosensitive silver halide provided predominantly as tabular grains, and said binder is a hydrophilic binder or a water-dispersible polymeric latex.

9. The thermally developable composition of claim 1 further comprising photosensitive preformed silver bromide or silver iodobromide grains, and wherein said binder is gelatin, a gelatin derivative, a cellulosic material, or a poly(vinyl alcohol), said non-photosensitive source of reducible silver ions includes a silver salt of benzotriazole, said reducing agent comprises one or more compounds defined in Structure I and identified in the following list with the noted R_1 and R_2 groups:

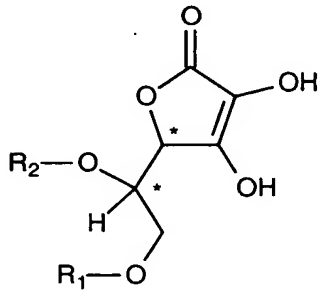
Compound	**Derived From**	**R_1**	**R_2**
I-1	L-ascorbic acid	*t*-Butyl-(C=O)-	H
I-2	D-isoascorbic acid	*t*-Butyl-(C=O)-	H
I-3	L-ascorbic acid	*t*-Butyl-(C=O)-	*t*-Butyl-(C=O)-
I-4	D-isoascorbic acid	*t*-Butyl-(C=O)-	*t*-Butyl-(C=O)-
I-5	D-isoascorbic acid	H	*t*-Butyl-(C=O)-
I-6	L-ascorbic acid	*i*-Propyl-(C=O)-	H
I-7	L-ascorbic acid	Ph-(C=O)-	H

I-8	L-ascorbic acid	1-Adamantyl-(C=O)-	H
I-9	L-ascorbic acid	1-Adamantylmethyl-(C=O)-	H
I-10	L-ascorbic acid	1-Methylcyclohexyl-(C=O)-	H
I-11	L-ascorbic acid	2-Adamantylmethyl-(C=O)	H
I-12	L-ascorbic acid	2,2-Dimethylpropyl-(C=O)-	H
I-13	L-ascorbic acid	Cyclohexyl-(C=O)-	H
I-14	L-ascorbic acid	1,1-Dimethylpropyl-(C=O)-	H
I-15	L-ascorbic acid	1-Ethylpropyl-(C=O)-	H
I-16	L-ascorbic acid	2,4,4-Trimethylpentyl-(C=O)-	H
I-17	L-ascorbic acid	2-Methylpropyl-(C=O)-	H
I-18	L-ascorbic acid	Cyclopentyl-(C=O)-	H
I-19	L-ascorbic acid	Diethylamino-(C=O)	H
I-20	L-ascorbic acid	Diethylamino-(C=O)-	Diethylamino-(C=O)-
I-21	L-ascorbic acid	Phenyl-NH-(C=O)-	H
I-22	L-ascorbic acid	Hexyl-NH-(C=O)-	Hexyl-NH-(C=O)-
I-23	L-ascorbic acid	*t*-Butyl-(C=O)-	Ethyl-(C=O)-
I-24	L-ascorbic acid	Ethyl-(C=O)-	Ethyl-(C=O)-
I-25	L-ascorbic acid	Ethyl-O-(C=O)-	H
I-26	L-ascorbic acid	Phenyl-O-(C=O)-	H
I-27	L-ascorbic acid	4-HO-Phenyl-(C=O)-	H
I-28	L-ascorbic acid	2-norbornylmethyl-(C=O)-	H
I-29	L-ascorbic acid	3,4-$(HO)_2$-Phenyl-(C=O)-	H
I-30	L-ascorbic acid	*i*-Propyl-(C=O)-	*i*-Propyl-(C=O)-
I-31	L-ascorbic acid	Ethyl-(C=O)-	Ethyl-(C=O)-

10. A thermally developable imaging material comprising a support and having on at least one side thereon one or more thermally developable imaging layers comprising a binder, and in reactive association, a non-photosensitive

source of reducible silver ions that includes a silver salt of a compound containing an imino group, and a reducing agent for said non-photosensitive reducible silver ions,

wherein said reducing agent is a compound, or mixture thereof, represented by the following Structure (I):



(I)

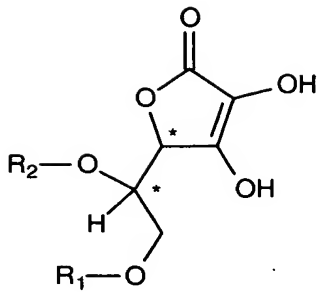
wherein R_1 and R_2 are independently hydrogen or an acyl group having 11 or fewer carbon atoms, provided that at least one of R_1 and R_2 is an acyl group.

11. The material of claim 10 that is a non-photosensitive thermographic material.

12. The material of claim 11 wherein said binder is a hydrophilic binder or a water-dispersible polymeric latex.

13. A black-and-white photothermographic material comprising a support and having on at least one side thereon one or more thermally developable imaging layers comprising a binder, and in reactive association, a photosensitive silver halide, a non-photosensitive source of reducible silver ions that includes a silver salt of a compound containing an imino group, a reducing agent for said non-photosensitive reducible silver ions, and optionally an outermost protective layer disposed over said one or more thermally developable imaging layers,

wherein said reducing agent is a compound, or mixture thereof, represented by the following Structure (I):



(I)

wherein R_1 and R_2 are independently hydrogen or an acyl group having 11 or fewer carbon atoms, provided that at least one of R_1 and R_2 is an acyl group.

14. The material of claim 13 further comprising a phosphor in at least one of said thermally developable imaging layers.

15. The material of claim 13 wherein said non-photosensitive source of reducible silver ions includes a silver salt of benzotriazole or a substituted derivative thereof, or mixtures of such silver salts, said material is an aqueous-based material and comprises predominantly one or more hydrophilic binders or one or more water-dispersible polymeric latex binders in said one or more thermally developable imaging layers, and said photosensitive silver halide comprises one or more preformed photosensitive silver halides that are provided predominantly as tabular grains.

16. The material of claim 13 wherein said reducing agent is present in an amount of from about 0.3 to about 1.0 mol/mol of total silver.

17. The material of claim 13 wherein said acyl group comprises from 2 to 11 carbon atoms.

18. The material of claim 13 wherein said acyl group comprises a cyclic group or a branched alkyl group.

19. The material of claim 13 wherein said reducing agent comprises one or more compounds defined in Structure I and identified in the following list with the noted R_1 and R_2 groups:

Compound	Derived From	R_1	R_2
I-1	L-ascorbic acid	*t*-Butyl-(C=O)-	H
I-2	D-isoascorbic acid	*t*-Butyl-(C=O)-	H
I-3	L-ascorbic acid	*t*-Butyl-(C=O)-	*t*-Butyl-(C=O)-
I-4	D-isoascorbic acid	*t*-Butyl-(C=O)-	*t*-Butyl-(C=O)-
I-5	D-isoascorbic acid	H	*t*-Butyl-(C=O)-
I-6	L-ascorbic acid	*i*-Propyl-(C=O)-	H
I-7	L-ascorbic acid	Ph-(C=O)-	H
I-8	L-ascorbic acid	1-Adamantyl-(C=O)-	H
I-9	L-ascorbic acid	1-Adamantylmethyl-(C=O)-	H
I-10	L-ascorbic acid	1-Methylcyclohexyl-(C=O)-	H
I-11	L-ascorbic acid	2-Adamantylmethyl-(C=O)	H
I-12	L-ascorbic acid	2,2-Dimethylpropyl-(C=O)-	H
I-13	L-ascorbic acid	Cyclohexyl-(C=O)-	H
I-14	L-ascorbic acid	1,1-Dimethylpropyl-(C=O)-	H
I-15	L-ascorbic acid	1-Ethylpropyl-(C=O)-	H
I-16	L-ascorbic acid	2,4,4-Trimethylpentyl-(C=O)-	H
I-17	L-ascorbic acid	2-Methylpropyl-(C=O)-	H
I-18	L-ascorbic acid	Cyclopentyl-(C=O)-	H
I-19	L-ascorbic acid	Diethylamino-(C=O)	H
I-20	L-ascorbic acid	Diethylamino-(C=O)-	Diethylamino-(C=O)-
I-21	L-ascorbic acid	Phenyl-NH-(C=O)-	H
I-22	L-ascorbic acid	Hexyl-NH-(C=O)-	Hexyl-NH-(C=O)-
I-23	L-ascorbic acid	*t*-Butyl-(C=O)-	Ethyl-(C=O)-

I-24	L-ascorbic acid	Ethyl-(C=O)-	Ethyl-(C=O)-
I-25	L-ascorbic acid	Ethyl-O-(C=O)-	H
I-26	L-ascorbic acid	Phenyl-O-(C=O)-	H
I-27	L-ascorbic acid	4-HO-Phenyl-(C=O)-	H
I-28	L-ascorbic acid	2-norbornylmethyl-(C=O)-	H
I-29	L-ascorbic acid	3,4-$(HO)_2$-Phenyl-(C=O)-	H
I-30	L-ascorbic acid	*i*-Propyl-(C=O)-	*i*-Propyl-(C=O)-
I-31	L-ascorbic acid	Ethyl-(C=O)-	Ethyl-(C=O)-

20. The material of claim 13 comprising one or more toners at least one of which is a mercaptotriazole, triazine thione, phthalazine, or phthalazine derivative.

21. A black-and-white aqueous-based photothermographic material that comprises a transparent support having on at least one side thereof:

a) one or more thermally developable imaging layers each comprising a hydrophilic binder that is gelatin, a gelatin derivative, a poly(vinyl alcohol), or a cellulosic material, or is a water-dispersible polymeric latex, and in reactive association,

a preformed photosensitive silver bromide, silver iodobromide, or a mixture thereof, provided predominantly as tabular grains,

a non-photosensitive source of reducible silver ions that includes one or more organic silver salts at least one of which is a silver salt of benzotriazole,

a reducing agent for said non-photosensitive source of reducible silver ions, and

b) optionally, an outermost protective layer disposed over said one or more thermally developable imaging layers, and

wherein said reducing agent comprises one or more compounds defined in Structure I and identified in the following list with the noted R_1 and R_2 groups:

Compound	Derived From	R_1	R_2
I-1	L-ascorbic acid	*t*-Butyl-(C=O)-	H
I-2	D-isoascorbic acid	*t*-Butyl-(C=O)-	H
I-3	L-ascorbic acid	*t*-Butyl-(C=O)-	*t*-Butyl-(C=O)-
I-4	D-isoascorbic acid	*t*-Butyl-(C=O)-	*t*-Butyl-(C=O)-
I-5	D-isoascorbic acid	H	*t*-Butyl-(C=O)-
I-6	L-ascorbic acid	*i*-Propyl-(C=O)-	H
I-7	L-ascorbic acid	Ph-(C=O)-	H
I-8	L-ascorbic acid	1-Adamantyl-(C=O)-	H
I-9	L-ascorbic acid	1-Adamantylmethyl-(C=O)-	H
I-10	L-ascorbic acid	1-Methylcyclohexyl-(C=O)-	H
I-11	L-ascorbic acid	2-Adamantylmethyl-(C=O)	H
I-12	L-ascorbic acid	2,2-Dimethylpropyl-(C=O)-	H
I-13	L-ascorbic acid	Cyclohexyl-(C=O)-	H
I-14	L-ascorbic acid	1,1-Dimethylpropyl-(C=O)-	H
I-15	L-ascorbic acid	1-Ethylpropyl-(C=O)-	H
I-16	L-ascorbic acid	2,4,4-Trimethylpentyl-(C=O)-	H
I-17	L-ascorbic acid	2-Methylpropyl-(C=O)-	H
I-18	L-ascorbic acid	Cyclopentyl-(C=O)-	H
I-19	L-ascorbic acid	Diethylamino-(C=O)	H
I-20	L-ascorbic acid	Diethylamino-(C=O)-	Diethylamino-(C=O)-
I-21	L-ascorbic acid	Phenyl-NH-(C=O)-	H
I-22	L-ascorbic acid	Hexyl-NH-(C=O)-	Hexyl-NH-(C=O)-
I-23	L-ascorbic acid	*t*-Butyl-(C=O)-	Ethyl-(C=O)-
I-24	L-ascorbic acid	Ethyl-(C=O)-	Ethyl-(C=O)-
I-25	L-ascorbic acid	Ethyl-O-(C=O)-	H
I-26	L-ascorbic acid	Phenyl-O-(C=O)-	H
I-27	L-ascorbic acid	4-HO-Phenyl-(C=O)-	H

I-28	L-ascorbic acid	2-norbornylmethyl-(C=O)-	H
I-29	L-ascorbic acid	3,4-$(HO)_2$-Phenyl-(C=O)-	H
I-30	L-ascorbic acid	*i*-Propyl-(C=O)-	*i*-Propyl-(C=O)-
I-31	L-ascorbic acid	Ethyl-(C=O)-	Ethyl-(C=O)-

22. The material of claim 21 wherein said hydrophilic binder is gelatin or a gelatin derivative, silver benzotriazole is the predominant source of reducible silver ions, and said reducing agent is one or more of Compounds I-1, I-2, I-7, and I-9.

23. A black-and-white photothermographic material comprising a support having on a frontside thereof,

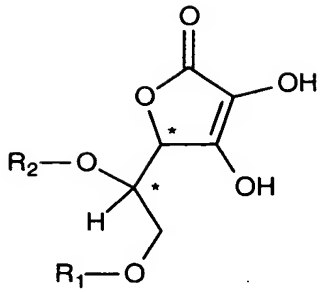
a) one or more frontside thermally developable imaging layers comprising a hydrophilic polymer binder or water-dispersible polymer latex binder, and in reactive association, a photosensitive silver halide, a non-photosensitive source of reducible silver ions that includes a silver salt of a compound containing an imino group, a reducing agent for said non-photosensitive source reducible silver ions, and

said material comprising on the backside of said support, one or more backside thermally developable imaging layers comprising a hydrophilic polymer binder or a water-dispersible polymer latex binder, and in reactive association, a photosensitive silver halide, a non-photosensitive source of reducible silver ions that includes a silver salt of a compound containing an imino group, and a reducing agent for said non-photosensitive source reducible silver ions, and

b) optionally, an outermost protective layer disposed over said one or more thermally developable imaging layers on either or both sides of said support, and

wherein said one or more thermally developable imaging layers, or said one or more protective layers if present, on both sides of said support have the same or different composition, and

said reducing agents on both sides of said support are the same or different and each reducing agent is a compound, or mixture thereof, represented by the following Structure (I):



(I)

wherein R_1 and R_2 are independently hydrogen or an acyl group having 11 or fewer carbon atoms, provided that at least one of R_1 and R_2 is an acyl group.

24. A method of forming a visible image comprising:

A) imagewise exposing the photothermographic material of claim 13 to form a latent image,

B) simultaneously or sequentially, heating said exposed photothermographic material to develop said latent image into a visible image.

25. The method of claim 24 wherein said thermally developable material comprises a transparent support, and said image-forming method further comprises:

C) positioning said exposed and thermally-developed material with the visible image therein between a source of imaging radiation and an imageable material that is sensitive to said imaging radiation, and

D) exposing said imageable material to said imaging radiation through the visible image in said exposed and thermally-developed material to provide an image in said imageable material.

26. The method of claim 24 wherein said imagewise exposing is carried out using visible or X-radiation.

27. The method of claim 24 wherein said thermally developable material is arranged in association with one or more phosphor intensifying screens during imaging.

28. The method of claim 24 wherein said exposed photothermographic material is used for medical diagnosis.

29. A method of forming a visible image comprising:

A) imagewise exposing the photothermographic material of claim 23 to form a latent image,

B) simultaneously or sequentially, heating said exposed photothermographic material to develop said latent image into a visible image.

30. An imaging assembly comprising the photothermographic material of claim 13 that is arranged in association with one or more phosphor intensifying screens.

31. A method of forming a black-and-white image comprising exposing the imaging assembly of claim 30 to X-radiation.